PID Lamp Information & Troubleshooting Sheet

(cat.#s 20675, 20676, 23020)

Overview

Because the PID lamp is a vacuum tube designed to emit ultraviolet energy, there are specific handling procedures users should follow. This information sheet addresses common questions and issues that occur with most PID lamps.

Operation, temperature, and current

All PID lamps are carefully tested before shipment and are guaranteed to be in good operating condition when received. However, the practice of operating at elevated temperatures causes the warranty period to be limited to three months from the time of purchase. Operation at various currents and temperatures will produce differing effects on life expectancy. In general, the lower the operating current and temperature, the longer the lamp life. Also, turning the lamp off when not in use will extend its life.

Handling

Avoid touching the "window" of the PID lamp. Finger oils will seriously restrict UV transmission, greatly affecting sensitivity. If finger oils are evidenced on the PID lamp window, rinse with a degreasing solvent such as acetone.

Installation

Follow the installation instructions provided by the instrument manufacturer when changing PID lamps. Never over-tighten. Over-tightening will damage PID lamps, resulting in failure or decreased lifetime.

Cleaning

Normal operating conditions result in a UV-absorbing deposit condensing on the outside of the lamp window. Periodically the window must be cleaned to restore the lamp output. This can be accomplished by using the PID lamp polishing kit (cat.# 20674). Also, polishing the contact ring at the base of the PID is recommended prior to use or after long periods of use. This ring is metal and will build an oxide layer that will affect performance by inhibiting electrical contact. Use the PID lamp polishing kit (cat.# 20674) for this, too.

Troubleshooting Tips

Problem: Declining output

This is the most common problem and easiest to solve of all PID troubleshooting situations. During use, column bleed often condenses on the window of the PID lamp. This buildup of siloxanes directly interferes with the amount of UV energy that reaches the sample. Clean the PID lamp window as per instructions in the owner's manual or the PID Lamp Polishing Kit (cat.# 20674).

Problem: Lamp will not light

If the PID lamp itself is cracked, the vacuum integrity inside the lamp will fail and the lamp will not operate. Visually inspect the lamp for any damage or cracks and replace the lamp if necessary. Corrosion can form on the electrical contacts at the base of the PID lamp. Clean the base metal of the PID lamp using the PID lamp polishing kit (cat.# 20674). If the lamp fails to light after installation, clean the contact ring as instructed above. Oxidation of this ring will cause the lamp to not light.

Problem: The PID lamp rattles when shaken

This is play that has been built into the PID lamp to compensate for the different rates of expansion and contraction of the glass/metal interface. This will not affect the performance of the PID lamp.

Problem: Broken lamp

Overtightening the PID lamp into the mounting plates often causes this. Follow prescribed installation method in your instrument owner's manual.

Problem: Slowly losing sensitivity and a mirrorlike appearance is starting to form in the lamp

This is part of the aging process of a PID lamp. The mirrorlike appearance is a deposition of metals on the inside surface of the lamp. These deposits will begin to absorb the UV energy, thus lowering the output (sensitivity achieved) of the lamp. When this happens, replace the lamp.

Problem: The color at the base of the lamp is not uniform

This will have no effect on the performance of the lamp. The metal used is a special alloy called Kovar. Its stages of oxidation will show different shades of grey/gold. If the oxidation affects lighting, use the PID polishing kit (cat.# 20674) to polish the oxide off the surface.

Helpful Information

The PID lamp must be operated at a constant temperature. Changes in the temperature will have a direct effect on the output of the PID lamp. Iron oxide powder supplied in the PID lamp polishing kit (cat.# 20674) is ideal for cleaning. The abrasives are small enough to only polish the window of the PID lamp, and no scratching will occur. Do not exceed an operating temperature of 250°C for the PID lamp. Higher temperatures will drastically reduce the lifetime of the lamp. When the lamp is not in use, cool down the detector block and turn it off. Temperature cycling does not have an effect on the metal/glass seal. It is designed to expand and contract at a rate that will not crack the glass.

Contact Technical Service at 1-800-356-1688, 1-814-353-1300, ext. 4, or support@restek.com (or contact your Restek representative) if you have any questions about this product or any other Restek product.

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